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Advanced Materials Science Research

Investigation the structural changes, optical and non-linear optical properties in cadmium phosphate glass system containing vanadium

Ahmed Hosny Hammad

King Abdulaziz University, Saudi Arabia

Biography

Ahmed Hosny Hammad is a Faculty at King Abdulaziz University, Saudi Arabia, He has an expertise in enhancing the structural units in glass as well as the glass-ceramics.

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Different nominals of CdO-P2 O5 -V2 O5 glass systems have prepared via conventional melt quenching technique. The main purpose of the present research is how to improve the phosphate network by the cadmium and vanadium content. Vanadium oxide may work as a glass modifi er or a glass former depending on the glass composition and the vanadium ratio. The presence of the CdO and V2 O5 makes these glasses act as semiconductor materials through lowering the band gap and also enhances the non-linear optical behavior. Therefore, the replacement of P2 O5 and CdO by vanadium pentoxide is examined. Structural investigation, such as density, molar volume, and the other related parameters estimated in terms of the vanadium content. The glass morphology of the present system was detected by scanning electron microscopy. Raman and Infrared spectroscopies used to detect the structural building units of the prepared glass system. Optical and nonlinear optical properties were determined and calculated as a function of vanadium content. The correlation between the structural changes and the optical properties was discussed in terms of the non-bridging oxygens linkage.

Publications

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